

FACTORS INFLUENCING ADOPTION OF RECOMMENDED *BORO* PADDY CULTIVATION PRACTICES-A STUDY IN ASSAM

PURNIMA SAIKIA¹, NAGEN BORDOLOI² & SANGEETA SHARMA³

¹Research Scholar Student, Department of Extension Education, A.A.U, Jorhat, Assam, India

²Professor & Head, Department of Extension Education, A.A.U, Jorhat, Assam, India

³Doctorate Fellow in Department of Extension Education, FA, A.A.U, Jorhat, Assam, India

ABSTRACT

The study was conducted to examine the influence of independent variables on overall extent of adoption of improved boro paddy cultivation practices in Biswanath sub-division, Sonitpur district of Assam. Ex-post-facto research design was followed. Data were collected by means of personal interview schedule. A total of 120 farmers were selected as sample respondents by following random sampling technique. Karl Pearson's product moment coefficient of correlation, Multiple Regression and 't'-test were the statistical techniques used for the analysis of data. The findings reveals that socio-economic factors viz 'type of family', 'size of operational land holding', 'annual income', 'occupational status', 'mass media exposure', 'extension contact', 'social participation' and 'economic motivation' were found positive and significant relationship with extent of adoption while 'risk preference' had significant but negative correlation. The selected socio economic variables contributed 61% (adjusted $R^2 = 61\%$) to express the adoption behavior of farmers with respect to boro paddy cultivation.

KEYWORDS: Extent of Adoption & Boro Paddy

Received: Jun 05, 2017; **Accepted:** Jun 25, 2017; **Published:** Jul 18, 2017; **Paper Id.:** IJASRAUG201732

INTRODUCTION

In Assam *boro* (summer rice) and early *ahu* (autumn rice) are grown in drier season and expansions of areas under these crops are the key to raise the productivity of rice in the state. *Boro* is the most productive season for growing rice in Assam as the sky remains clear during crop growing period and is risk-free so far as flood and drought are concerned. Farmers are encouraged to take up its cultivation in the season when irrigation facilities are available. However, the main environmental factor limiting *boro* paddy cultivation is the cold stress. Minimum temperature falls down to as low as 100 °C in the vegetative stage and 150 °C during panicle initiation stage that are detrimental for obtaining potential yield. The effect of cold is more severe in the districts of Upper Assam (Golaghat, Jorhat, Sivasagar, Dibrugarh, Tinsukia). Therefore, *boro* paddy is traditionally not grown in these districts. Of the state's total area of 2.5 million ha under rice, *boro* paddy covers only about 0.15 million ha (Anon., 1993). Area, production and average yield of *boro* paddy in Assam during 2008-09 was 3.60 lakh ha, 7.71 lakh MT and 2,142 kg/ ha (Anon., 2008-09) and during 2012-13 was 3.93 lakh ha, 11.64 lakh MT and 2,965 kg/ha (Anon., 2014). The spread of the newer varieties replacing the older varieties need to be closely monitored to take the advantage of the superior characters these newer varieties released by various research institutions. This will help to break the yield plateau that has been experiencing in rice crop in the recent past and to increase the production and productivity of the crop. Achievement of *boro* paddy in Assam during 2014-15 was 4.16 lakh ha, 12.24 lakh MT

and 2,940 kg/ha in terms of area, production and yield.

RESEARCH METHODOLOGY

The present study was carried out in Biswanath sub-division of Sonitpur district of Assam because the acreage of *boro* paddy cultivation under Biswanath sub-division was 1,664 hectares and the production and productivity were 7,409.80 MT and 4,453 kg/ha respectively (Anonymous, 2014-15). Two development blocks namely Biswanath and Baghmara development block were selected randomly. Six villages were selected from the two selected development block namely Niz-Biswanath, Kumolia, Swaguri, Rotowa, Kherbari, Behapukhuri. A total of 120 farmers were selected as respondents for the study by following proportionate random sampling technique.

The dependent variable of the study was extent of adoption on improved practices of *boro* paddy cultivation. Measurement procedure for measuring extent of adoption was followed in the light of the procedure used by Baruah (2004). Eleven independent variables were selected for the study viz., age, educational level, type of family, size of operational land holding, annual income, occupational status, mass media exposure, extension contact, social participation, risk preference and economic motivation. The independent variables i.e. age, annual income, mass media exposure, extension contact, social participation were measured with the help of structured schedule. The other independent variables i.e. educational level, type of family, size of operational land holding, occupational status, risk preference, and economic motivation were measured with the help of established scale already suggested by different authors.

To measure the relationship between the variables, 'Karl Pearson's product moment co-efficient of correlation' was worked out. Significance of correlation co-efficient was tested with the help of 't'-test.

'Multiple regression analysis' was employed to find out the combined influence of the selected set of independent variables on the dependent variable.

FINDINGS

Socio Economic Profile

The Table 1.1 reveals that age of the respondents had no significant relationship with the overall extent of adoption. Therefore, the null hypothesis (H_01), i.e. there is no significant relationship between the age of the farmers and their extent of adoption could not be rejected. Similar kind of findings were also reported by Hussain (1982), Ingale (1983), Sawant (1984), Borpuzari (1987), Gogoi (1989), Islam (2007) and Bhardwaj *et al.* (2015).

Educational level of the respondents had no significant relationship with the overall extent of adoption. Therefore, the null hypothesis (H_02), i.e. there is no significant relationship between the education level of the farmers and their extent of adoption could not be rejected. Similar kind of finding was reported by Patil (1988).

The findings of the correlation analysis also showed that family type of the respondents was found to be positively and significantly correlated with the extent of adoption. It indicated that the extent of adoption was more with the farmers with the joint family type. Hence, the null hypothesis (H_03) that there is no significant relationship between the family type of the farmers and their extent of adoption was rejected. It might be due to the fact that the joint family type of a farmer helped in earning more annual income as well as material support, developing confidence in them for more extent of adoption of improved practices of *boro* paddy cultivation. The result of this study was supported by Ahir (1985).

Operational land holding of the respondents on *boro* paddy had a positive and significant relationship with the extent of adoption. This indicated that more the size of operational land holding of a respondent, the better was the extent of adoption. Hence, the null hypothesis (H_04), i.e. there is no significant relationship between the operational land holding of the farmers and their extent of adoption was rejected. Operational land holding of a farmer might help in earning more annual income and developing more confidence to the farmers for more extent of adoption of improved practices of *boro* paddy cultivation. The results of this study were supported by Ingale (1983), Sawant (1984), Kesarkar (1985), Sarkar *et al.* (2003), Singha and Baruah (2011), Bhardwaj *et al.* (2015).

Table 1.1: Correlation Coefficient between Independent Variables and Overall Extent of Adoption of Improved Boro Paddy Cultivation Practices

Independent Variables	'R' Value	'T' Value
Age	0.145	1.596
Educational level	0.130	1.427
Type of family	0.184*	2.041
Size of operational land holding	0.399*	4.734
Annual income	0.413*	4.930
Occupational status	0.433*	5.230
Mass media exposure	0.564*	7.429
Extension contact	0.572*	7.585
Social participation	0.339*	3.925
Risk preference	-0.445*	5.399
Economic motivation	0.332*	3.826

*Significant at 0.05 level probability

Annual income was found to have a positive and significant relationship with the extent of adoption. This revealed that more the annual income of a farmer, the better was the extent of adoption. Hence, the null hypothesis (H_05), i.e. there is no significant relationship between the annual income of the farmers and their extent of adoption was rejected. This finding goes in line with the findings of Ingale (1983), Kesarkar (1985), Ahir (1985), Islam (2007), Salehin *et al.* (2009), Prasad and Choudhary (2010), Shah *et al.* (2014), Bhardwaj *et al.* (2015) and Chowdhury *et al.* (2016). The reason behind this positive relationship might be due to the fact that more annual income of a farmer helped in developing confidence in them for taking more risk which lead to more extent of adoption of improved practices of *boro* paddy cultivation.

Occupational status was found to have a positive and significant relationship with the extent of adoption. This indicated that higher the occupational status, the better was the extent of adoption. Hence, the null hypothesis (H_06), i.e. there is no significant relationship between the occupational status of the farmers and their extent of adoption was rejected. This indicated that higher occupational status could increase yield and income and could undertake risk bearing task for adoption of improved *boro* paddy cultivation practices. Similar kind of findings was also reported by Sawant (1984), Kesarkar (1985), Dhote (1994) and Bhardwaj *et al.* (2015).

Mass media exposure was found to possess a positive and significant relationship with the extent of adoption. This revealed that more the mass media exposure of a respondent, the better was the extent of adoption. Hence, the null hypothesis (H_07), i.e. there is no significant relationship between the mass media exposure of the farmers and their extent of adoption was rejected. This finding goes in line with the findings of Kumar *et al.* (2014). The reason behind this positive relationship might be due to the fact that the more a farmer uses different sources to access information on farming, the

more he becomes aware of, gathers knowledge, develops proper perception on improved practices *boro* paddy cultivation, etc. and all these effects his extent of adoption in a positive manner.

The findings of the correlation analysis also showed that extension contact of the respondents was positively and significantly correlated with the extent of adoption. It indicated that more the extension contact more was the extent of adoption. Hence, the null hypothesis (H_08) that there is no significant relationship between the extension contact of the farmers and their extent of adoption was rejected. This might be due to the fact that more contacts with the extension personnel helped them in acquiring more information as well as material support, developing confidence in them and thereby increasing the acceptability of improved practices of *boro* paddy cultivation. Similar kinds of findings were also reported by Dhote (1994), Islam (2007), Singha and Baruah (2011), Kumar *et al.* (2014) and Chowdhury *et al.* (2016).

Social participation was found to have a positive and significant relationship with the extent of adoption. This indicated that more the social participation, the better was the extent of adoption. Hence, the null hypothesis (H_09), i.e. there is no significant relationship between the social participation of the farmers and their extent of adoption was rejected. Social participation helps in getting opportunity for interaction with other members to be aware of such practices along with other information and also getting mutual help in acquiring resources etc. Similar findings were also reported by Ingale (1983), Sawant (1984), Kesarkar (1985), Dhote (1994), Kumar *et al.* (2014) and Bhardwaj *et al.* (2015).

Risk preference of the respondents on *boro* paddy had a negative and significant relationship with the extent of adoption. This indicated that lower the risk preference, higher was the extent of adoption. Hence, the null hypothesis (H_{010}), i.e. there is no significant relationship between the risk preference of the farmers and their extent of adoption was rejected. It might be due to the fact that lower the risk preference more was the chance in making a big profit which led to more extent of adoption of improved practices of *boro* paddy cultivation.

Economic motivation of the respondents had a positive and significant relationship with the extent of adoption. This indicates that higher the economic motivation, the better was the extent of adoption. Hence, the null hypothesis (H_{011}), i.e. there is no significant relationship between the economic motivation of the farmers and their extent of adoption was rejected. It might be due to the fact that economic motivation motivates a farmer to adopt modern ways of farming developing positive attitude towards modern agricultural techniques. Similar kind of finding was also reported by Kumar *et al.* (2014).

Influence of the Independent Variables to the Dependent Variable

Regression analysis was employed to determine the combined effect of independent variables on the dependent variable. For regression analysis 8 independent variables were selected which had the significant relationship with the extent of adoption.

Data presented in Table 1.2 revealed that out of 8 independent variables, occupational status, mass media exposure, extension contact, risk preference and economic motivation had significant effect on overall extent of adoption, the regression coefficients being $b=0.631$, $b=0.208$, $b=0.318$, $b=-0.236$, and $b=0.282$ respectively. The R^2 value was 0.642, which indicating that the variables jointly contributed 64.20 per cent towards variation in extent of adoption of *boro* paddy cultivation. Further, the variables whose regression coefficient values (b) were found to be significant (occupational status, mass media exposure, extension contact, risk preference and economic motivation) could be termed as good predictors of extent of adoption.

Table 1.2: Influence of the Selected Independent Variables on Overall Extent of Adoption

Variables	B Value	'T' Value
Type of family	0.568	0.787
Size of operational land holding	0.323	1.601
Occupational status	0.631*	2.123
Mass media exposure	0.208**	2.865
Extension contact	0.318**	2.869
Social participation	-0.258	-0.531
Risk preference	-0.236**	-4.013
Economic motivation	0.282**	3.144
R²	0.642	
Adjusted R²	0.616	
F value	24.914	

*Significant at 0.05 level probability (b= estimated regression co-efficient)**Significant at 0.01 level probability

CONCLUSIONS

The findings implies that, except age and educational level, most of the variables under study such as type of family, size of operational land holding, annual income, occupational status, mass media exposure, extension contact, social participation, risk preference and economic motivation has significant impacts on extent of adoption of improved cultivation practices of *boro* paddy as evident by their significant' values of simple correlations. So, there is a need for the extension agencies and other concern departments to positively manipulate these crucial factors in order to bring about desirable changes in the adoption of improved practices of *boro* paddy cultivation.

REFERENCES

1. Ahir, U. S. (1985). A study of the categories of the adopters of the rice varieties released by the Konkan Krishi Vidyapeeth. M.Sc. thesis, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, College of Agric., Dapoli.
2. Anon. (2008-09). Status Paper on Rice in Assam. www.rkmp.co.in.
3. Anon. (1993). Statistical handbook of Assam. Directorate of Economics and Statistics, Government of Assam, India.
4. Anon.(2014). Assessment of Rabi crops. National conference on agriculture: Kharif campaign, Assam.
5. Baruah, M. J. (2004). A study on differential adoption behavior of farmers in diversified farming practices under Sonitpur district of Assam. M.Sc. (Agri.) thesis, Deptt.of Extn. Edn., FA, A.A.U., Jorhat.
6. Bhardwaj, R. K., Gautam, S.S. and Saxena, R.R. (2015).Statistical evaluation to identify the factors affecting the adoption and non-adoption of technology by farmers under rice production technologies. *Int. J. of Math. Trends and Tech.* **26**(2).
7. Borpuzari, D. C. (1987). A study on extent of adoption of improved wheat cultivation practices by the farmers of Allengmora A. E. O. Circle, North-East Development Block, Jorhat District, Assam. Unpublished M.Sc. (Agri.) thesis, Deptt.of Extn. Edn, FA, A.A.U., Jorhat.
8. Chowdhury, A.K.M.H.U., Haque, M.E. and Hoque, M.Z. (2016). Adoption of BRRI Dhan 47 in Satkhira Sadar Upazila of Bangladesh. *Int. J. of Adv. Res. and Dev.* **1**(1):11-15.
9. Dhote, S. G. (1994).A comparative study of factors affecting adoption of HYVs of paddy by small farmers in Konkan and Vidarbha region.M.Sc. Thesis, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, College of Agric., Dapoli.
10. Gogoi, S. K. (1989). A study on the extent of adoption of recommended plant protection measures in Sali rice by the farmers of Jorhat District of Assam. Unpublished M.Sc. (Agri.) thesis, Deptt.of Extn. Edn, FA, A.A.U., Jorhat.

11. Hussain, A. (1982). *Extent of adoption of improved sali paddy cultivation by the farmers of North-West Jorhat Development Block of Sivasagar District of Assam. Unpublished M.Sc. (Agri.) thesis, Deptt.of Extn. Edn, FA, A.A.U., Jorhat.*
12. Ingale, G. T. (1983). *A study of adoption of the practices recommended for the control of rice stem borer in Rajanala area of Raigad district. M.Sc. thesis, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, College of Agric., Dapoli.*
13. Islam, M. Z. (2007). *Adoption of BRRI dhan 29 production technologies by the farmers. M.Sc. Thesis, Sher-e-Bangla Agril. Univ., Dhaka.*
14. Kesarkar, S. A. (1985). *A study of extent of use of fertilizers and constraints experienced by rice growers in Sindhudurg district. M.Sc. thesis, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, College of Agric., Dapoli.*
15. Kumar, G. A., Sailaja, V., Satyagopal, P. V. and Prasad, S. V. (2014). *Evaluation of profile characteristics of SRI cultivation farmers in relation to their extent of adoption of technologies. Current Biotica, 8(1):36-41.*
16. Patil, D.P. (1988). *A study of small farmers in relation to their needs and adoption of rice technology. M.Sc. Thesis, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, College of Agric., Dapoli.*
17. Prasad S. N. and Choudhary, A.K. (2010). *Extent of adoption and constraints in boro rice cultivation faced by the farmers in Darbhanga District of Bihar. Indian J. of Extn. Edn. 46 (1&2):106-111.*
18. Salehin, M. M., Kabir, M. S., Morshed, K. M. and Farid, K. S. (2009). *Socioeconomic changes of farmers due to adoption of rice production technologies in selected areas of Sherpur district. J. Bangladesh Agril. Univ., 7(2): 335-341.*
19. Sarkar, P., Prashan, K. and Acharjee, S. K. (2003). *Extent of adoption with respect to some socio-economic, socio-personal and socio-psychological factors in case of Boro paddy cultivation in Nadia district, West Bengal. Indian J. Interacademia, 7(1):105-110.*
20. Sawant, B.N. (1984). *A study of awareness and adoption of different high yielding varieties of rice farmers. M.Sc. thesis, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, College of Agric., Dapoli.*
21. Shah, M. M. I., Grant, W. J. and Stocklmayer, S. (2014). *Adoption of hybrid rice in Bangladesh: farm level experience. J. of Agril.Sci. 6 (7).*
22. Singha, A. K. and Baruah, M. J. (2011). *Farmers' adoption behavior in rice technology under different farming systems in Assam. J. Hum. Ecol. 35 (3):167-172.*